

REMARKS/ARGUMENTS

Favorable consideration of this application is respectfully requested. Applicant has amended claims 1, 3, 5, 6, 9, 15, 16, 19 and 23 and canceled claims 7, 20 and 25-38. Applicant has also amended the specification to add a heading and paragraph on page 1, line 1 to cross reference the present application as a divisional of co-pending patent application serial number 10/141,582 filed on May 8, 2002; and has amended the description of the preferred embodiment to correctly refer to Fig. 6B and Fig. 7B and to correctly use reference numbers 400 and 500. No new matter has been added. Favorable reconsideration of this application is, consequently, earnestly solicited in view of the following remarks.

Claim Rejections - 35 U.S.C. § 102:

Claims 1, 4-6, 8-12, 15-16 and 18-23 were rejected under 35 U.S.C. 102(b) as being anticipated by Takahara (US 6219113 B1).

Examiner rejected claims 1, 8, 10 and 12 alleging that Takahara teaches the method of forming an electronic lens (Figs. 62, 69-71). Claim 1 has been amended to add providing a patterned mask, providing a liquid crystal layer of homogeneous liquid crystal droplets, and to simultaneously form the lens using the patterned mask, wherein the sizes of the liquid crystal droplets vary according to the patterned mask.

Takahara describes a mask 181 (Fig. 63) for use in producing the liquid crystal display panel of Fig. 62. The mask 181 requires an opening over the pixel electrode 14c and a shield 202a pattern on both sides of the opening. A first mixed solution 315a is

exposed to an UV light of strength c to form droplets of one size. The process of using the mask is repeated to form adjacent droplets of a different size wherein the size of the droplets are based on the strength of the UV exposure. (See col. 54, lines 4-28). The UV exposure determines the size the droplets in the present invention. However, the UV exposure is determined by the pattern of the patterned photo mask; darker areas less exposure (larger droplets) and lighter areas higher level of exposure (smaller droplets) producing the inhomogeneous layer.

Claim 1 has been amended to add providing a single patterned photo mask and to clarify that the sizes of the droplets vary according to the patterned photo mask and only using the mask once to achieve droplets having different sizes. Simply put, Takahara requires repeating the same process using the mask over and over with different UV strengths to form the inhomogeneous layer. Claim 1 of the present invention forms the inhomogeneous layer with one uniform UV exposure using the patterned mask once.

In regard to the tuning of the refractive index of the light, in the present application, the reflective index of the light passing through the layer is tuned according to the voltage applied to the lens. For the negative lens, an increase in voltage reduces the refractive index as shown in Fig. 2 where V_2 is greater than V_1 . Examiner references col. 57, lines 5-6 of Takahara for tuning. The reference to a low and high reflective index refers to the resin and the liquid crystal component, each having a different refractive index. Since the concentration of resin is increased in the center, the refractive index is the refractive index of the resin (low) and the refractive index of the liquid crystal component at the edge is high. The voltage is not varied, the material is different. The refractive index in the "ON" state is the same, see col. 57, lines 39-41. For these reasons,

applicant believes that amended claim 1 is allowable and thus, respectfully requests the examiner to remove the rejection to claim 1.

In regard to claims 8, 10 and 12, Examiner alleges that Takahara further teaches forming an array of lens, a prism 642, and an array of prisms from the lens 641. Lens 641 is a lens used in place of a patterned mask for producing (Fig. 69) the liquid crystal display of Fig. 70 (resin and liquid crystal component). To form the display of Fig. 70, the UV rays are radiated through the lens 641. The lens does not have a varying refractive index as the lens of the present application. Reference number 642 refers to the transparent substrate (col. 55, lines 66-67) on which the lens and the prism are formed. The only reference to a prism found in Takahara is prism 671 (Fig. 68(a), Col. 55, lines 49-51) which is used as an alternative to using the lens 641 (Fig. 68(b)) in the liquid crystal display fabrication method shown in Fig. 69. Note, the lens and prism in Takahara are necessarily 3-dimensional for radiating the UV light. The lens and prism of the present invention do not have that limitation. Since Takahara does not teach the use of a lens 641 to form a prism 671 (claim 10) or an array of prisms (claims 8 and 12), applicant respectfully requests that examiner remove the rejection to claims 8, 10 and 12.

In regard to claims 15-16 and 19-20, Examiner alleges that Takahara teaches (FIG. 18, 62, 69-71) a method of fabricating an inhomogeneous layer of liquid crystal (LC) droplets with a patterned photo mask (optical coupling 691 and light shield 202) as shown in Fig. 69. The optical coupling agent 691 and shield 202 are used in reference to the liquid crystal display of Fig. 70 which has two materials, resin and a liquid crystal layer. The liquid crystal layer does not include liquid crystal droplets, just larger and

smaller concentrations of resin (low refractive index) and liquid crystal material (high refractive index).

Claims 16 and 19-20 were rejected alleging that the combination of the shield 202 and the optical coupling agent 691 are used to form a lens or a prism. According to Fig. 69, the lens 641 is used in conjunction with the shield 202 and optical coupling agent 691 to produce the liquid crystal layer 21. Alternatively, a prism 671 is used in place of the lens 641. The liquid crystal layer 21 (Fig. 70) includes resin and a liquid crystal component in different concentration as discussed above, not liquid crystal droplets having different sizes corresponding to different refractive indices.

Applicant has amended claim 15 to clarify that the size of the liquid crystal droplets are patterned according to the patterned photo mask. Applicant has cancelled claim 20 which claims the same subject matter as claim 19. For these reasons, applicant requests examiner to remove the rejection to claims 15-16 and claims 19-20.

Claims 4, 5 and 18 were also rejected as being anticipated by Takahara alleging that the mixed solution (resin with a low refractive index and liquid crystal component with a high refractive index) is comparable to the liquid crystal droplets sizes in the present application. This simply is not so. Instead, the liquid crystal layer 21 in Fig. 70 includes amounts of resin that decreases from center to side edges. According to col. 57, lines 14-19 of Takahara, the strength of the UV ray at the center of the lens 641 causes the resin in the center of the pixel to set, and pushes the liquid crystal component in the center to the peripheral portion and pulls the resin from the peripheral portion to the center. The refractive index does not gradually increase, the amount of liquid crystal component increases and regardless of the amount of liquid crystal component, the liquid

crystal component has the same refractive index. In col. 57, lines 39-41, in the ON state (voltage applied) the refractive indexes of the liquid crystal layer 21 becomes even and the liquid crystal layer goes to a transparent state. For these reasons, applicant respectfully requests the examiner to remove the rejection.

In regard to the rejection of claim 6 of the present invention, Fig. 71b of Takahara shows the scattering of incident light in the OFF state. In claim 6, the uniform voltage is a voltage corresponding to one of the different size liquid crystal droplets. As described on page 8, lines 7-9, the turn on voltage of the LC composite depends on the droplet sizes, the smaller the droplet, the higher the threshold voltage. As a result the gradient refractive index profile is generated. Thus, applicant respectfully requests the examiner to remove the rejection of claim 6.

Claims 9, 21 and 22 were also rejected under 35 U.S.C. 102(b) by Takahara. Fig. 104, 105 nor col. 3, lines 44-46 show or describe forming a fresnel lens from a patterned mask. Merely finding the word "Fresnel" in this publication is not adequate to support the rejection absent a description teaching or suggesting forming the fresnel lens from a patterned mask. Thus, applicant respectfully requests the examiner to remove the rejection of claims 9, 21 and 22.

In regard to the rejection of claim 11, the method of Fig. 69 is now being used by examiner to produce a switchable prism. It produces adjacent pixels of a liquid crystal display and nothing more. It does not include liquid crystal droplets of different sizes and it does not produce a switchable prism. Examiner is required to specifically describe the reason for the rejection, not just the examiner's opinion. Thus, applicant requests examiner remove the rejection.

In regards to rejection of claim 23, claim 23 has been amended to correctly depend from the positioning step of claim 15 and includes the step of positioning the liquid crystal layer having polymer dispersed therein. Amended claim 23 depends from amended claim 15. Applicant believes that amended claim 15 is allowable and therefore, applicant requests examiner remove the rejection.

Claim Rejection - 35 U.S.C. 103:

Examiner also rejected claims 2-3 and 17 under 35 U.S.C. 103(a) as being unpatentable over Takahara.

In regard to claim 2, Examiner alleging that Takahara discloses forming a positive lens by the liquid crystal droplets having sizes increasing gradually from a center area of the layer to a side edge of the layer. Takahara does not disclose forming a positive lens. The method of forming adjacent areas of liquid crystal droplets wherein each adjacent area has a different refractive index (Fig. 62) combined with the method of separating resin and a liquid crystal component (Fig. 70) does not form a positive lens and Takahara does not teach or suggest using either method to form a positive lens as claimed in claim 2 of the present application.

There is no teaching, nor suggestion for modifying Takahara to include all the novel features of the amended claims. Under well recognized rules of the MPEP (for example, section 706.02(j)), the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.

Applicant contends that Takahara cannot be modified to incorporate the features of subject claims 2, 3 and 17 without utilizing Applicant's disclosure. The courts have consistently held that obviousness cannot be established by combining the teachings of the prior art to Applicant to produce the claimed invention, absent some teaching, suggestion, incentive or motivation supporting the combination. In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Thus, removal of the rejection is respectfully requested.

Examiner rejected claims 7 and 27 under 35 U.S.C. 103(a) as being unpatentable over Takahara as applied to claims 1, 4-6, 8-12, 15-16 and 18-23 in view of Lewis et al. (US 6271899 B1). The rejection is moot because application has cancelled claim 7 and claim 27 was directed toward the non-elected invention, and has therefore been cancelled.


Claims 13 and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Takahara alleging that Takahara teaches that eyeglasses and a zoom lens on a camera can be produced from the method (Takahara Fig. 69) used to produce the display shown in Takahara Fig. 70. There is no mention of use for eyeglasses or a camera lens. Nor is there a teaching, nor suggestion for modifying Takkahara to include all the novel features of the amended claims. Under well recognized rules of the MPEP (for example, section 706.02(j)), the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. Examiner cannot base an obviousness rejection on his own opinion. The prior art must provide a motivation or reason for someone of ordinary skill in the art, without the benefit of the inventor's specification to make the necessary changes. Takahara describes methods for producing an active matrix display panel that is

not transparent as is required for producing an electronic lens for use as eye glasses or a camera lens. Thus, removal of the rejection is respectfully requested.

Applicant contends the references cannot be modified to incorporate the features of subject claims 1-6, 8-19 and 21-24 without utilizing Applicant's disclosure. The courts have consistently held that obviousness cannot be established by combining the teachings of the prior art to Applicant to produce the claimed invention, absent some teaching, suggestion, incentive or motivation supporting the combination.

In view of the foregoing considerations, it is respectfully urged that claims 1-6, 8-19 and 21-24 be allowed. Such action is respectfully requested. If the Examiner believes that an interview would be helpful, the Examiner is requested to contact the attorney at the below listed number.

Respectfully Submitted;



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2/15/05